

Introduction

- Superior cerebellar vermian arteriovenous malformations (AVMs) and posterior fossa dural arteriovenous fistulas (dAVFs) are uncommon lesions.
- Surgical approaches include occipital trans-tentorial (OTT) and supracerebellar infratentorial (SCIT) approaches.
- Each approach can be performed in a variety of positions including sitting, prone, Concorde, or park-bench positions.
- Here, we present our experience with 13 patients resected through a SCIT approach in a modification of the park bench position (vertex tilt-up instead of down).
- This modification has not been reported in the literature.

Methods

- Design: Retrospective
- Period: 2009-2016
- From 2009 to 2016
- 13 patients
- 6 males and 7 females
- mean age: 54.4 years, range: 20-83.
- 4 patients underwent adjunctive endovascular embolization prior to surgery.

Operative Details

Patient Positioning

- Patients intubated in supine position.
- Placed in lateral position.
- Instead of tilting the vertex downward, the head was tilted upward to get a wider corridor.
- Then, the head was flexed and rotated toward the floor approximately 45°.

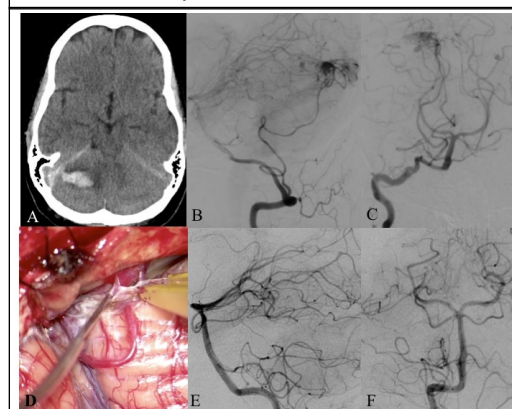
Surgical Technique

- Midline linear incision from the external occipital protuberance to C1 spinous process.
- Torcular craniotomy above and below transverse sinus.
- Dura opened and reflected superiorly toward the transverse sinus.
- For superior vermian AVMs, the feeders were coagulated and ligated first followed by coagulation and ligation of draining veins and resection of the AVM nidus.
- For dAVFs, the draining vein was accessed early in the patients using this approach.
- As CSF was removed, the cerebellum sagged inferiorly, opening the supracerebellar corridor.
- Postoperative angiography was done to confirm complete resection of the lesion.

Illustrative Case



Operative Position



48-yo F with a cerebellar ICH. DSA shows a superior vermian AVM fed by SCA and PICA. After partial embolization, totally resected through a SCIT approach in the modified park bench position. Post-operative DSA showed complete resection.

Results

- Postoperative DSA confirmed complete resection in 12 patients.
- 1 patient with a remnant was explored on the same day and the remnant was resected.
- Mean operating time (from incision to closure) = 3 hours and 6 minutes (range 2-4 hours).
- Mean estimated blood loss = 258 ml (range 50-500 ml).
- 1 superficial wound infection, treated with oral antibiotics.
- 1 patient presented with a CSF collection postoperatively. subsequently shunted.
- Mean follow-up period = 17.3 months (range 1-33 months).
- Median MRS at discharge = 3
- Median MRS at last follow-up = 1
- No surgical complications at last follow-up

Conclusions

For superior vermian AVMs and dAVFs, the supracerebellar infratentorial approach in a vertex tilt-up park bench position is a safe and effective surgical approach.